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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,667	01/22/2002	Norihisa Mino	10873.876US01	8002

23552 7590 02/24/2004

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EXAMINER	
KOPPIKAR, VIVEK D	

ART UNIT	PAPER NUMBER
1775	

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/055,667	MINO ET AL.	
	Examiner	Art Unit	
	Vivek D Koppikar	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) *13-35 and 41-55* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-12 and 36-40* is/are rejected.

7)☒ Claim(s) *7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

FINAL OFFICE ACTION

Election/Restrictions

1. Applicant's election of Claims 1-12 and 36-40 in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6, 9-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over 5,609,907 to Natan in view of US Patent Number 5,294,252 to Gun.

Natan is directed towards a substrate coated with self-assembled metal colloid monolayers.

With regard to Claim 1, Natan teaches a process of coating a substrate with a bifunctional organic film to impart a functionality on the substrate that allows for the bonding of metal colloid particles. Next the organic film-coated substrate is contacted with a solution of colloid metal particles and the particles become bound to the functional groups on the organic film. The metallic particles have an affinity for certain functional groups. Thus, the examiner takes the position that the metallic particles are also coated in the organic film (Col. 3, Ln. 39-59 and Claim 1) and therefore the metal particles become aligned on the substrate by the chemical

bonding of the functional groups of the coating present on the surface of the particles to the functional groups of the coating present on the surface of the substrate.

Natan does not teach that the film coating the particles and the substrate is a monomolecular film.

Gun is directed towards a monomolecular film used on the surfaces of various materials. The monomolecular film in Gun is made of a functional group (Col. 2, Ln. 21-36). The monomolecular film is very thin and stable and has superior hydrophobic properties (Col. 3, Ln. 1-6). At the time of the invention, one of ordinary skill in the art would have used a monomolecular film as the coating of the substrate in place of the coating taught in Natan with the expectation of producing a thin and stable film with superior hydrophobic properties as recited in Gun.

With regard to Claim 2, in one embodiment of Natan a single layer of an assembly film in Natan consists of an alignment of fine particles (Figure ID, Subfigure C).

With regard to Claim 3, in one embodiment of Natan the fine particles are aligned in the form of accumulated layers and the fine particles are bonded to each and immobilized as is apparent from the figure (Figure 1D, Subfigure D).

With regard to Claim 4, the fine particles have a size of between 3 to 100 nanometers (Claim 7).

With regard to Claim 5, the organic coating film of Natan is self-assembling (Col. 3, Ln. 39-42).

With regard to Claim 6, figure 1b shows that the fine particles are patterned and aligned on the surface of the substrate (Figure 1B).

With regard to Claim 9, the organic coating film used in Natan forms covalent attachments to the surface (Col. 3, Ln. 1-4).

With regard to Claim 10, the fine particles in Natan are either Au or Ag (metals) (Col. 3, Ln. 39-42).

With regard to Claim 12, the substrate in Natan is either a metal or metal oxide (tin oxide) (Claim 2).

4. Claims 1, 4, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 82/02403 to Nguyen in view of US Patent Number 5,294,252 to Gun.

Nguyen is directed towards a photo setting composition for coating substrates with an abrasion-resistant, transparent film.

With regard to Claim 1, Nguyen teaches an olefinic composition (organic film) containing a mineral filler. The mineral filler is in the form of silica or alumina particles. The surfaces of the particles are grafted with organic groups to make them organophillic and compatible with the olefinic composition. When the particles are organophilic they become immobilized by chemical bonds when they are placed in the organic coating matrix (Page 7, Ln. 33- Page 8, Line 19; Page 18, Ln. 10-20 and Claim 1.

Nguyen does not teach that the film coating the particles and the substrate is a monomolecular film.

Gun is directed towards a monomolecular film used on the surfaces of various materials. The monomolecular film in Gun is made of a functional group (Col. 2, Ln. 21-36). The monomolecular film is very thin and stable and has superior hydrophobic properties (Col. 3, Ln. 1-6). At the time of the invention, one of ordinary skill in the art would have used a

monomolecular film as the coating of the substrate in place of the coating taught in Nguyen with the expectation of producing a thin and stable film with superior hydrophobic properties as recited in Gun.

With regard to Claim 4, in Nguyen the size of the particles embedded in the organic matrix is between 7 to 30 nm (Page 9).

With regard to Claim 9, in Nguyen the organic coating surrounding the particles are bonding to the olefinic composition (the organic film) through chemical bonds (covalent bonding) (Page 18, Ln. 10-20).

With regard to Claim 10, in Nguyen the particles are either silica or alumina (metal oxides) (Claim 1).

With regard to Claim 12, in Nguyen the substrate is glass in one embodiment (Page 1, Ln. 19-24).

5. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 4,737,419 to Hilden in view of US Patent Number 5,294,252 to Gun.

Hilden is directed towards an overcoat for a particulate magnetic recording disk. Hilden teaches a disk (substrate) which is coated with carbon (organic coating) (Col. 4, Ln. 16-27). The coating includes magnetic particles which are immersed within the organic binder coating (Col. 5, Ln. 5-10).

The examiner takes the position that the magnetic particles are aligned on the substrate (magnetic recording disk) since the coating surrounding the particles is the same as the coating overcoating the disk.

Hilden does not teach a monomolecular coating which coats the disk or the magnetic particles.

Gun is directed towards a monomolecular film used on the surfaces of various materials. The monomolecular film in Gun is made of a functional group (Col. 2, Ln. 21-36). The monomolecular film is very thin and stable and has superior hydrophobic properties (Col. 3, Ln. 1-6). At the time of the invention, one of ordinary skill in the art would have used a monomolecular film as the coating of the substrate in place of the coating taught in Hilden with the expectation of producing a thin and stable film with superior hydrophobic properties as recited in Gun.

6. Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,404,602 to Sasaki in view of US Patent Number 5,609,907 to Natan and US Patent Number 5,294,252 to Gun.

Sasaki teaches a magnetoresistve device with an organic insulating layer (Col. 5, Ln. 4-13 and Col. 6, Ln. 52-54). Electrodes are present in order to change the electrical resistance with the use of an external signal magnetic field and a current (Col. 15, Ln. 59-Col. 16, Ln. 1-5). The device also includes a shield for shielding the magnetoresistve device (Col. 2, Ln. 42-48) and a yoke for guiding the magnetic field (Col. 10, Ln. 29-42).

In Sasaki the organic insulating layer does not include particles formed within the layer.

Natan teaches a process of coating a substrate with a bifunctional organic film to impart a functionality on the substrate that allows for the bonding of metal colloid particles. Next the organic film coated substrate is contacted with a solution of colloid metal particles and the particles become binded to the functional groups on the organic film. The metallic particles

have an affinity for certain functional groups. Thus the metallic particles are also coated in the organic film (Col. 3, Ln. 39-59 and Claim 1).

At the time of the invention, one of ordinary skill in the would have been motivated to add particles within the organic film layer of Sasaki as taught in Natan with the expectation of obtaining a magnetoresistive device with a uniform roughness and a high degree of stability and durability over time as recited in Natan (Col. 3, Ln. 33-38).

Natan does not teach that the film coating the particles and the substrate is a monomolecular film.

Gun is directed towards a monomolecular film used on the surfaces of various materials. The monomolecular film in Gun is made of a functional group (Col. 2, Ln. 21-36). The monomolecular film is very thin and stable and has superior hydrophobic properties (Col. 3, Ln. 1-6). At the time of the invention, one of ordinary skill in the art would have used a monomolecular film as the coating of the substrate in place of the coating taught in Natan with the expectation of producing a thin and stable film with superior hydrophobic properties as recited in Gun.

7. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,465,342 to Taguchi in view of US Patent Number 5,609,907 to Natan.

Taguchi teaches a semiconductor device with a barrier layer (54) and an organic insulating layer (52) (Figure 8A and Col. 2, Ln. 38-53).

The organic insulating layer in Taguchi does not teach an organic film which consists of fine particles embedded within the film.

Natan teaches a process of coating a substrate with a bifunctional organic film to impart a functionality on the substrate that allows for the bonding of metal colloid particles. Next the organic film coated substrate is contacted with a solution of colloid metal particles and the particles become binded to the functional groups on the organic film. The metallic particles have an affinity for certain functional groups. Thus the metallic particles are also coated in the organic film (Col. 3, Ln. 39-59 and Claim 1). At the time of the invention, one of ordinary skill in the would have been motivated to add particles within the organic insulating layer of Taguchi as taught in Natan with the expectation of obtaining a magnetoresistive device with a uniform roughness and a high degree of stability and durability over time as recited in Natan (Col. 3, Ln. 33-38).

Natan does not teach that the film coating the particles and the substrate is a monomolecular film.

Gun is directed towards a monomolecular film used on the surfaces of various materials. The monomolecular film in Gun is made of a functional group (Col. 2, Ln. 21-36). The monomolecular film is very thin and stable and has superior hydrophobic properties (Col. 3, Ln. 1-6). At the time of the invention, one of ordinary skill in the art would have used a monomolecular film as the coating of the substrate in place of the coating taught in Natan with the expectation of producing a thin and stable film with superior hydrophobic properties as recited in Gun.

Allowable Subject Matter

8. Claim 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims. The reasons for indicating allowable subject matter was set forth in the office action dated October 1, 2003 as part of Paper No. 6.

Response to Arguments

9. Applicant's arguments with respect to claims 1-6, 9-12 and 36-40 have been considered but are moot in view of the new grounds of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Vivek Koppikar** whose telephone number is **(571) 272-1537.** The examiner can normally be reached on Monday-Friday from 8 AM to 5 PM, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones, can be reached at (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-1537.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Vivek Koppikar

2/9/04

DEBORAH JONES
SUPERVISORY PATENT EXAMINER